

REMARKS

The present Amendment is in response to the Examiner's Final Office Action mailed April 11, 2006. Claims 2-4, 8-10, 14-15, 17-23, and 25-26 are cancelled, claims 1, 11-13, 16, and 24 are amended, and claims 27-33 are new. Claims 1, 5-7, 11-13, 16, 24, and 27-33 are now pending in view of the above amendments.

Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants' understanding and discussion of the references, if any, is consistent with the Examiner's understanding.

I. 35 U.S.C. § 112, First Paragraph

The Examiner rejects claims 26 under 35 U.S.C. § 112, first paragraph. The Examiner rejects the claim on the grounds that the specification does not enable a control module "to operate in whichever operational mode requires the least amount of energy." Claim 26 has been cancelled and the subject matter of claim 26 has been incorporated into independent claim 24. The Applicants respectfully disagree with the § 112 rejection and refer the Examiner to ¶ [0033] of the specification, which states, "The additional energy required to heat the air can be compared to the additional energy required to drive the VCSEL 510 when it is not at the optimal temperature to determine which requires less energy." This statement in the context of the remainder of the specification clearly describes a control module with two operational modes and selecting the mode that requires the least amount of energy. Therefore, Applicants submit that the subject matter of claim 26, which has been incorporated into claim 24 meets the

enablement requirement of 35 U.S.C. § 112. Furthermore, the rejection of claim 26 is moot since this claim has been cancelled.

III. PRIOR ART REJECTIONS

A. Rejection Under 35 U.S.C. § 103

The Examiner rejects claims 1–3 and 5–25 under 35 U.S.C. § 103 as being unpatentable over an article entitled “Enhanced Performance of Offset-Gain High-Barrier Vertical-Cavity Surface-Emitting Lasers”, by Young et al. (“*Young*”) in view of U.S. Patent No. 5,740,191 to Kasper, et al. (“*Kasper*”). Of those claims, claims 1 and 24 are pending independent claims. For at least the reasons outlined below, Applicant respectfully submits that the rejections of claims 1 and 24 should be withdrawn.

The claimed invention is directed to a vertical cavity surface emitting laser module that has a predetermined operating temperature that is greater than room temperature. The module includes a temperature sensor and a heater. The heater is configured to transfer heat to the laser when the temperature of the vertical cavity surface emitting laser falls below an activation temperature. Claim 1 has been amended to require that the activation temperature be determined “in relation to a current of the vertical cavity surface emitting laser.” Support for this amendment can be found in the specification in the last sentence of paragraph [0032]. Neither *Young* nor *Kasper* teach selecting an activation temperature that is determined at least in part from the current needed to drive the laser. Therefore, Applicants respectfully submit that rejection of claim 1 under § 103 should be withdrawn.

Independent claim 24 is also directed to a vertical cavity surface emitting laser module. Claim 24 requires a control module configured to operate in “a first operation mode where a change in operating temperature of the VCSEL is associated with a VCSEL operating current output of the control module” and in “a second operation mode where a change in operating temperature of the VCSEL is associated with a Heating element control output of the control module.” Claim 24 has been amended to require (i) an “increase in VCSEL operating current output” or (ii) a change in “heating element control output” when the VCSEL operating temperature drops below an activation temperature. In addition, claim 24 has been amended to require the control module to be “configured to operate in whichever operational mode requires

the least amount of energy, relative to the other operation mode.” As mentioned above, support for this amendment can be found in ¶ [0033] of the specification. Neither *Young* nor *Kasper* teaches or suggests a control module with two operational modes and operating in the mode that requires the least amount of energy. Therefore, Applicants respectfully submit that the rejection of claim 24 under § 103 should be withdrawn.


Claim 11 has been amended to depend from claim 1 and to claim an operating temperature greater than “30 degrees Celsius.” Claims 12, 13, and 16 have been amended to depend from claim 1. New claims 27–33 all depend from claim 24 and are similar to the claims that currently depend from claim 1. Claims 5–7, 11–13, 16, and 27–33 all depend from either claim 1 or claim 24. Therefore, claims 5–7, 11–13, 16, and 27–33 are allowable for at least the same reasons that claims 1 and 24 are allowable.

CONCLUSION

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner’s Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 11th day of October, 2006.

Respectfully submitted,



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